

PPL13 Project Nominee Fact Sheet

March 12, 2003

Project name: Caernarvon Diversion Outfall Management (East) BS -5- 2

Coast 2050 Strategy: #5 “Operate existing diversions and manage their outfall”

Project Location

Region 2 (91%) and a portion of Region 1(9%) , St. Bernard and Plaquemine Parishes – Project extends east from Caernarvon freshwater diversion outfall canal to the MRGO spoil bank

Mapping Units: Region Two: “Lake Lery” and “Jean Louis Robin”)

Region One: ”Central Wetlands”

Problem

The historic Bayou Terre aux Boeufs / Bayou La Loutre distributary channel connection to the Mississippi River has been severed for over 100 years and is no longer available to deliver fluvial water to the benefit areas (Roberts and Stone, MRSNFR report). Four benefit areas (16,038 acres) are located a few miles east of Caernarvon, La., have been significantly effected due to a lack of river water, salinity intrusion and other factors. Three benefit areas (1, 2 and 3 – see map) have had significant historic land loss (27%) or ongoing land loss(Lake Lery and Jean Louis Robin). A forth benefit area (Central wetlands) is a swamp impounded by the MRGO spoil bank, which is stressed by saltwater and a lack of nutrients. Associated with the benefit areas are two rare undeveloped natural levee and ridge forested habitats that would also benefit from this project.

All of the benefit areas are in the upper most reach of their sub-basins and were historically the least saline in each sub-basin. They now receive negligible fluvial water input. The Caernarvon Diversion structure has excess capacity during certain times of the year and is being underutilized. Even under higher discharge, freshwater from the existing Caernarvon Diversion structure is unlikely to significantly impact the target areas, especially those areas east of Bayou Terre aux Boeufs.

Project Goals

- 1) Re-establish historic hydrology of northern reaches of Bayou Terre aux Boeufs and Bayou La Loutre
- 2) Deliver nutrients to areas of significant land loss or impoundment to promote marsh growth.
- 3) Utilize the discharge capacity of the Caernarvon Diversion structure
- 4) Deliver freshwater to the historic fresher habitats of the sub-basin
- 5) Re-establish historic northeast-southwest orientation of habitat boundaries of Breton Basin
- 6) Enhance two natural levee and ridge habitats along Bayou Terre aux Boeufs and Bayou la Loutre

Proposed Solution

Two canals extend east near the Caernarvon out flow channel, which could convey water from the Caernarvon Diversion structure to the benefit areas and Bayou Terre aux Boeufs. Bayou Terre aux Boeufs would be re-established as a minor distributary of the Mississippi River and deliver water to Bayou La Loutre and the benefit areas during periods of flow. An inverted siphon would be constructed to discharge water from the Caernarvon Diversion Canal to one of the conveyance canals without blocking navigation on Caernarvon Canal. The two alternative conveyance canals are the borrow/access levee canal south of the hurricane protection levee south of the town of St.

Bernard and the “40 Arpent Canal” also south of the same levee. The conveyance canal would functionally replace the portion of Bayou Terre aux Boeufs, which is now within the St. Bernard Parish’s levee system and no longer available for its former role of building and nourishing marshes downstream. Discharge rates will be determined by integrating with ongoing Caernarvon Diversion management and project goals of this project. Total discharge rates through outfall management to all four areas would range from 500 to 3000 cfs.

Preliminary Project Benefits

By freshening the benefit areas and increasing nutrient uptake, plant productivity of the benefit areas should increase. As a consequence organic accretion and organic export should increase promoting vertical and lateral accretion. Environmental quality will be enhanced. Net wetland loss rates will be reduced initially and after a few years net increase emergent vegetation should occur. Aquatics will also increase in open water.

<25% Wetland loss rates should drop from 13.1 ac/ year to 0 ac/year.

25-49% wetland increase would be 10ac/year

50-75% wetland increase would be 20ac/year

>75% wetland increase would be 30ac/year

Estimated net acreage change is 416 acres at Y20. Rate is taken from documentation of Caernarvon Diversion monitoring (Steyer, 2003) of the net wetland gain (.0013 ac/ year) of from 1990 to 2001.

Compatibility with Coast 2050 Criteria

Wetland Elevation/Sustainability

The central element of this project is an ongoing outfall management of a freshwater diversion. Benefits extend indefinitely as long as the diversion and outfall management are maintained. The ecosystem response is increased productivity, which will increase organic accretion and export. Freshwater introduction would reduce the influence of saltwater intrusion. If the project were run for twenty years and then ceased, benefits would extend several years beyond the end of the project.

Ecosystem Influence Area

16,038 acres are directly benefited (excluding natural levee along Bayou la Loutre, approximately additional 300 acres). Indirectly 9000 acres would benefit (area adjacent to benefit areas 2 & 3).

Structural Framework

The principal strategy of this project is to re-establish the natural hydrology of the upper reach of Bayou Terre aux Boeufs and Bayou La Loutre. These bayous are the key natural hydrologic and geomorphic structural components of the St. Bernard delta. These bayous and ridges are barriers to tidal flow and are the conduits for a modest volume of fluvial water. Sustaining and enhancing these features enhances their adjacent levees and marshes.

Infrastructure

Benefit areas 1 and 4 (Lake Lery and Central Wetlands mapping units) are crossed by a gas pipeline and subsurface cables. These features are being exposed to open water conditions as wetland loss has progressed.

Benefit areas 2 and 3 (Jean Louis Robin mapping unit) contain a four-mile length of back-levee east of settlements of Delacroix Island and Wood Lake. These levees are being exposed to open water conditions by expanding ponds within the benefit areas.

The entire north Bayou Terre aux Boeufs corridor (Delacroix to Verret) contains two state highways and several towns or fishing settlements. These features have minimal levee protection. Levee needs (elevation) will increase as wetland loss progresses within the region. Reducing wetland loss reduces the future increase of the storm tidal prism that is likely to impact these communities.

Organism and Material Linkages

The re-establishment of fluvial water to Bayous Terre aux Boeufs and Bayou La Loutre allows exchange of the estuarine system to the river that has not occurred for over 100 years. The stimulated freshwater systems will also establish exchange from Freshwater to Intermediate marsh.

Coast 2050 Habitat Objectives

The project would slightly freshen an area targeted as brackish in 2050 Figure 7-4. Nevertheless the area targeted is historically fresher and would benefit by re-introduction of fluvial water.

Project Synergy

This project mirrors the outfall management of CWPPRA project “Caernarvon Diversion Outfall Management” (BS-3a PPL 2), which was constructed in 2002. This project was designed to influence the hydrology so that more Caernarvon diverted water reach the upper rim of the basin toward the west. This project has a similar goal directing diverted water to the upper rim, but to the east. Both projects target areas of significant historical wetlands loss. The projects are geographic compliments to each other, but differ in the engineering design necessary to influence the hydrology.

Preliminary Construction Costs

\$15 – \$20 million (based on similar siphon built in 1982 on the Teche-Vermillion)

Preparer of Fact Sheet

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